ee One Shilling Net. February, 1918.

THE VETERINARY JOURNAL

A Monthly Review of Veterinary Science.

Editor:
FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E.,
HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING.
MAJOR IN THE ARMY VETERINARY CORPS.
HONORARY MEMBER OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.
ORRESPONDANT ÉTRANGER DE LA SOCIÉTÉ DE MÉDECINE VÉTÉRINAIRE DU BRABANT (BELGIUM).

Sub-Editor:
GLADSTONE MAYALL, M.R.C.V.S.

LONDON
BAILLIÈRE, TINDALL & COX
8, Henrietta Street, Covent Garden, W.C.2.

AGENTS { United States—ALEXANDER EGER, Chicago.
Australasia—GORDON & GOTCH, Melbourne, Sydney, Wellington.
Canada—THE MACMILLAN CO., Toronto.

Entered as Second-Class Matter in the U.S. Post Office.

Issue No. 512. Vol. 74 No. 2.

Results secured in both hospital and private practice have demonstrated to veterinarians that

THE CURE OF

Coughs, Bronchitis Pneumonia, Laryngitis, &c., in Horses and Dogs

can be effected with greater certainty and promptness by the use of

Glyco-Heroin (Smith)

than by the employment of any other remedy extant.

COUGHS.—Glyco-Heroin (Smith) checks cough instantly, relieves obstruction of the breathing passages, liquefies the mucus, allays the pain, subdues nervousness, abates the fever, and induces restful sleep. Relief is immediate and recovery rapid.

PNEUMONIA.—Glyco-Heroin (Smith) relieves the congestion, disperses engorgement, reduces the fever, sustains heart action, calms nervous excitement, renders respiration free and regular and shortens the duration of the disease. It conserves strength and forestalls the development of fatal complications.

BRONCHITIS.—Glyco-Heroin (Smith) allays inflammation of the bronchial tubes, arrests the cough, begets free breathing, dispels fever, liquefies the bronchial secretions, restores the appetite, and prevents the disease from assuming the chronic form.

LARYNGYTIS.—Glyco-Heroin (Smith) relieves inflammation of the larynx and tenderness of the throat, abates the fever, allays the pain, checks the cough, promotes the appetite, and induces quiet sleep.

DOSE.—The dose for horses and cattle is one ounce every two or three hours. For dogs, ten drops to half-teaspoonful.

SUBSTITUTION.—To ensure entirely satisfactory results, it is vitally important that veterinarians emphasise name "Smith" when purchasing or prescribing Glyco-Heroin (Smith), for many worthless substitutes for the remedy are offered by unscrupulous dealers.

LITERATURE.—Exhaustive clinical reports from the foremost hospitals and members of the veterinary profession will be sent, post paid, on request.

MARTIN H. SMITH COMPANY, NEW YORK.

Sole British Agents—

THOS. CHRISTY & Co., 4, 10 & 12, Old Swan Lane, LONDON, E.C.

XUM

XUM

FLUID EXTRACTS

Chemically and Physiologically Standardised.

For table of doses and method of dilution for production of corresponding Tinctures, please see our Drug List.

POWDERED DRUGS.

Ground in our own mills and guaranteed absolutely pure.

ANTISTREPTOCOCCIC, TETANIC AND SWINE FEVER SERA, MALLEIN AND TUBERCULIN

From the Pasteur Institute, Paris.

ANTI-BLACKLEG, ALSO ANTI-SUPPURINE AND STREPTOCINE BACTERIAL VACCINES

From the Cutter Company, U.S.A.

Canine Anti-Distemper Serum

(Dr. S. MONCKTON COPEMAN, F.R.S.)

WILLOWS, FRANCIS, BUTLER & THOMPSON, Limited,

WHOLESALE DRUGGISTS,

40, ALDERSGATE STREET, LONDON, E.C.

Telegrams: "FORTY, LONDON." **Telephone: CITY 3618 and 3619.**

Practical Books for Veterinarians

System of Veterinary Medicine. By various Writers (edited by E. WALLIS HOARE, F.R.C.V.S.). Complete in Two Volumes. Pp. 2990. Royal 8vo. Price, complete, **50s.** net, postage (inland) 1s. extra.

¶ *"The work is a good summary of veterinary therapeutics as its art and science stand to-day. There are few clinicians who will not find it useful for reference and there are many to whom it will be a very valuable guide."*—VETERINARY REVIEW.

HOARE'S Veterinary Therapeutics. A Guide to the Treatment of Disease in Domestic Animals. New (Third) Edition. Pp. xxiv. + 780. Price **18s.** net, postage 7d.

¶ *"It is certainly a book from which the practitioner may pick up numerous ideas. . . . The whole work is full of information."*—VETERINARY JOURNAL.
"A useful everyday companion."—VETERINARY RECORD.

HOBDAY'S Anæsthesia and Narcosis of Animals and Birds Pp. viii + 86, with 24 Illustrations. Price **5s.** net, postage 4d.

¶ *"It will prove one of inestimable value to the practitioner who has used anæsthetics for some time, and to the man starting in practice who wishes to avoid some of the pitfalls due to an incomplete knowledge of the forces which he endeavours to summon to his aid in alleviating animal suffering."*—VETERINARY JOURNAL.

SMYTHE'S Veterinary Parasitology. Pp. xiv. + 130, with 29 illustrations. Price **4s.** net, postage 4d.

¶ *Owing to the increased attention paid to the study of parasitology, there has arisen a need in our literature of a text-book dealing with the more common parasites of the domesticated animals. It has been the aim of the author to fill the gap with a volume which, while covering the course laid down for the student, shall, at the same time, be of practical value to the veterinarian as a book of reference.*

LANDER'S Veterinary Toxicology. Pp. xii + 314, with 39 Illustrations. Price **7s. 6d.** net, postage 5d.

¶ *"One of the most welcome volumes that has been presented to the veterinary profession for a long time."*—VETERINARY JOURNAL.
"This work is very complete, and practically the only one in English on the subject. The author is peculiarly fitted by training and actual experience to produce a work of this kind."—AMERICAN JOURNAL OF VETERINARY MEDICINE.

REEKS' Common Colics of the Horse: Their Causes, Symptoms, Diagnosis and Treatment. Third Edition. Pp. xvi. + 370, with 32 illustrations. Price **6s.** net, postage 4d.

¶ *"It may be fully commended to any student who desires to cultivate the practice of careful clinical observation. Practitioners will find it equally valuable in the same direction."*—VETERINARY RECORD.

SCOTT'S Clinical Bacteriology and Vaccine Therapy for Veterinary Surgeons. Pp. xiv + 222, with 12 Plates and 37 Illustrations in the text. Price **7s. 6d.** net, postage 5d.

¶ *"The only work of its kind explaining fully the theory and practice of Vaccine Therapy; it will be found invaluable to students and practitioners desirous of fitting up a private laboratory, the making of vaccines and the detailed application of the latter in practice."*

BAILLIERE, TINDALL & COX
8, HENRIETTA STREET, COVENT GARDEN, LONDON, W.C.2.

PROPHYLAXIS OF

JOINT-ILL IN FOALS

The very fatal disease, joint-ill (also known as navel-ill, umbilical infection, and pyæmic arthritis), may be due to a pre-natal cause—intra-uterine infection, or to a post-natal cause—infection of the wound in the umbilical cord.

TO OBVIATE THE PRE-NATAL CAUSE the mare should be immunised by means of the series of progressive doses provided in

PARKE, DAVIS & Co.'s

STREPTOCOCCUS AND STAPHYLOCOCCUS VACCINE, COMBINED

VETERINARY

NOTE.—Immunising treatment is best commenced a few months before the time of foaling. Six doses of the vaccine should be given in all, seriatim, with intervals of five days between each. It has been found helpful, also, to give the mare a subcutaneous injection of Parke, Davis & Co.'s Antistreptococcus Serum, Polyvalent, Veterinary, on one or two occasions shortly before the expected date of foaling.

* * *

TO COUNTERACT INFECTION OF THE UMBILICAL CORD, the foal should be given on the second and tenth days after birth subcutaneous injections of

PARKE, DAVIS & Co.'s

ANTISTREPTOCOCCUS SERUM, POLYVALENT

VETERINARY

NOTE.—Sanitary quarters should be provided for the mare before and after foaling, and Formiline Ointment (P., D. & Co.) should be applied to the umbilicus after the cord has been severed. If symptoms of joint-ill develop in a foal, a dose of the serum should be injected subcutaneously as soon as possible, and should be repeated on successive days until recovery is complete.

FURTHER PARTICULARS WILL BE SENT ON REQUEST.

PARKE, DAVIS & Co.,

50-54, Beak St., Regent St., LONDON, W.1.

CONTENTS.

PAGE

PORTRAITS—

The late Mr. T. WRIGHT, M.R.C.V.S., and the late Mr. J. A. TODD, M.R.C.V.S. .. .. *Frontispiece*

EDITORIALS—

Our Livelihood 41

Animal Food 43

ORIGINAL COMMUNICATIOHS—

Report on Ixodic Lymphangitis 44

Notes on the Treatment of Equine Specific Ophthalmia 54

Adenoma of the Kidney in a Horse 55

Bacterial Pyelonephritis in a Cow 56

Bloody Urine 58

The Aspergilliosis of Birds, Man, and Animals 59

TRANSLATIONS—

The Horse Lazaret, its Significance, Development and Present Position 65

Uræmia of Acarian Origin in Horses 69

Arsenivan in the Treatment of Epizootic Lymphangitis 72

The Curative Treatment of Epizootic Lymphangitis by Vaccine Therapy 73

The Production and Self-Destruction of Domestic Flies in Horse Manure 74

OBITUARY—

Mr. Thomas Wright, M.R.C.V.S. 75

Mr. J. A. Todd, M.R.C.V.S. 76

NOTICES.

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone : Gerrard 4646. Telegrams : " Baillière-Rand, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Manuscript—preferably typewritten—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown ink on white paper or card.

Advertisements and all business matters relating to the JOURNAL should be addressed to the publishers, Messrs. Baillère, Tindall and Cox.

Annual Subscription for the British Empire, 12s., post free; for the United States $3.00; or combined subscription with the " Veterinary News " (weekly), 25s., post free. Owing to increased cost of production the " Veterinary News " has been from July increased to 3d. per copy; annual subscription, post free, 15s. inland and abroad.

For VETERINARY USE.

Biological Products
of the Merieux Institute, Lyons.

THE various products are prepared under the immediate supervision of M. Merieux (late of the Pasteur Institute) by the most modern and approved scientific processes and submitted to the inspection prescribed by French Law.

In order to overcome the great difficulty of keeping serum with its full activity unimpaired and free from other deterioration, the "INALTER" VIAL has been placed on the market; **it can be kept for any length of time,** and when required **the Veterinary Surgeon is enabled, in the most simple manner and without trouble, to prepare a fresh liquid serum ready for use.**

DIRECTIONS:

"Fig. 1, A, represents the "INALTER" Vial—with U tube inside containing 1 gramme of dried serum and 9 c.c. carbolized water (1 gramme dried serum = 10 c.c. liquid serum). The rubber plug which seals the Vial and the U tube is withdrawn, and after the contents of the tube have been emptied into the solution, the plug is replaced in Vial, and the contents quickly dissolve. The freshly prepared serum is now ready for use as in Fig. 1, B.

A Fig. 1 B

ADVANTAGES:

The contents keep indefinitely.

The preparation of the Serum is speedy, simple and perfectly aseptic.

Ready for use whenever required.

The freshly prepared serum has full potency and activity.

The "Inalter" Vial is sold at the same price as the ordinary Serum.

The following Serums can be obtained in the "Inalter Vial" or in the usual liquid form—

Mallein, Tuberculin, Antitetanic, Antistreptococcic, Polyvalent Serum for distemper in Dogs.

LITERATURE and PRICE LIST ON REQUEST.

We have special facilities for the rapid delivery of export orders.

THE ANGLO-FRENCH DRUG CO., Ltd., GAMAGE BUILDING,
(Late M. Bresillon & Co.) — HOLBORN, E.C. —

Phone: Holborn 1311. Telegrams: "Ampsalvas."

THIRD EDITION. Pp. xxiv. + 943. Price 18s. net (postage 7d.)

WALLIS HOARE'S

Veterinary Therapeutics

A Guide to the Treatment of Disease in the Domestic Animals.

EXTRACTS FROM REVIEWS:

THE VETERINARY NEWS.—"The work is one of all-round excellence . . . . A book which no self-respecting member of the Veterinary profession can afford to do without . . . . For years has been recommended to Students. Now this recommendation will, we feel sure, be extended to this edition."

THE VETERINARY RECORD.—"The work is a good summary of veterinary therapeutics as its art and science stand to-day. There are few clinicians who will not find it useful for reference; and there are many to whom it will be a very valuable guide."

THE VETERINARY JOURNAL.—"The book marks an advance in an exact science, and is quite up to date in its matter and compilation. It should have a wide circulation and enhance the reputation of its author and our profession."

AMERICAN JOURNAL OF VETERINARY MEDICINE.—"In a word, this treatise is written in a manner which characterises its author—accuracy of statement, practicability and clarity of style in its composition are its noteworthy attributes. The work is not only well suited for the student of veterinary medicine, but will prove valuable to the practitioner."

BAILLIERE, TINDALL & COX, 8, Henrietta St., COVENT GARDEN LONDON.

GIGNOUX FRÈRES & Co.

Manufacturers of Pharmaceutical Preparations.

Works at DECINES, near Lyons, FRANCE.

IN CASES OF

LIVER ROT, FLUKE WORMS,

OR

DISTOMATOSIS,

ETHEREAL EXTRACT OF MALE FERN (GIGNOUX FRÈRES & Co.)

CAN SAFELY BE USED BY VETERINARY SURGEONS.

ETHEREAL EXTRACT of MALE FERN Kills the Germs and

SAVES SHEEP AND CATTLE.

London Agent:—

R. ANSAY, 44, Wilson Street, LONDON, E.C.2

'Phone: 3103 *London Wall.*

REAGENTS YOU CAN RELY UPON

TRADE MARK **'WELLCOME'** BRAND

Mallein

For Diagnosis of GLANDERS

A sterilised filtrate obtained from a culture, in glycerin broth, of *Bacillus mallei*. For diagnostic purposes, 1 c.c. is injected under the skin of the side of the neck. 'WELLCOME' Brand MALLEIN has established its reliability.

Phials of 1 c.c., 9d. each
Bottles of 30 c.c., 13/0 each

TRADE MARK **'WELLCOME'** BRAND

Tuberculin

For Diagnosis of TUBERCULOSIS

A standardised reagent giving accurate results. Consists of "Old Tuberculin" obtained from a strain of tubercle bacilli of bovine origin and diluted to present the required dose in convenient volume for injection.

Phials of 4 c.c., 9d. each
Bottles of 30 c.c., 4/0 each

These products are made in England at the Wellcome Physiological Research Laboratories, London.

Distributing Agents:
BURROUGHS WELLCOME & Co., LONDON

V. 92

COPYRIGHT

PAROPHYROXIA.
(HEWLETT'S)

Since we introduced this invaluable medicine into Veterinary Therapeutics no preparation has commanded such attention in the treatment of Colic with impaction and tympanites in horses. It is now used by most leading veterinarians, and is generally admitted to be the safest and most active of all the remedial agents employed for abdominal pain with impaction.

It possesses three distinctive therapeutic powers—*i.e.*, Antiseptic Purgative, and Carminative, and is indicated in all cases of Colitis caused by undigested food, or irritative affections of the alimentary canal, partly no doubt by removing acrid irritating secretions or foreign materials, neutralising gaseous fluids, depleting the congested blood vessels, and arresting the distended and tympanitic condition of the colon, rendering it the safest and most satisfactory purgative in these cases. It is peculiarly adapted for those cases of Colic so frequently met with in aged horses, who are generally described as "Gross Feeders," where the food is bolted and not sufficiently masticated owing to the teeth being faulty, and where the digestive organs are impaired from a loss of tone in the system, the circulation bad, and the necessary amount of gastric juice is insufficient to digest the food. It is very extensively used in Scotland by numerous practitioners for the Colic caused by coarse feeding which produces impaction with painful contraction of the muscular coat of the bowels accompanied with tympanites.

It is in these cases that Parôphyroxiâ has a very marked effect in reducing the spasm, arresting fermentation, and subduing the drum-like condition of the colon. The large amount of clinical evidence adduced in its favour by various experienced and sound practitioners commends it so strongly that it is now placed at the head of the list of the different agents employed in the general treatment of Colic.

It should be well borne in mind that as the drug is purgative in its action no physic ball or other purgatives should be administered, but if the practitioner deemed it necessary to follow up the treatment with another draught, some simple antispasmodic would not be contra-indicated.

Price 4/6 per lb. W. Quarts 4/3 per lb.

Introduced and Prepared only by

C. J. HEWLETT & SON, Ltd.,

Wholesale & Export Druggists & Surgical Instrument Makers.

35-42, CHARLOTTE ST., & 83-85, CURTAIN RD., LONDON, E.C.2.

THE LATE MR. T. WRIGHT, M.R.C.V.S.

THE LATE MR. J. A. TODD, M.R.C.V.S.

THE

VETERINARY JOURNAL

Editor :

FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E.,

HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING;
MAJOR IN THE ARMY VETERINARY CORPS.
HONORARY MEMBER OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.
CORRESPONDANT ÉTRANGER DE LA SOCIÉTÉ DE MEDECINE VÉTÉRINAIRE DU BRABANT (BELGIUM).

Sub-Editor :

GLADSTONE MAYALL M.R.C.V.S.

FEBRUARY, 1918.

Editorials.

OUR LIVELIHOOD.

It is not comforting for us to hear that there is a shortage of live-stock in our country, and that the number of our animals is declining. With no horses and flocks and herds there will no longer be any need for the veterinarian. In the process of reconstruction after the war, the increased breeding of animals must be kept well to the fore, and in season and out of season, we must cry aloud for an earnest consideration of the question. We often grumble about being ignored in fields where our expert knowledge entitles us to stand in the van of progress, but our professional status really depends on the healthy development and increase of the live-stock of the country. To secure the benefits to which our knowledge and experience entitle us, we must be well organised. The days are gone by when single individuals were able to rule the roost, and on every hand we see that by union and co-operation alone bodies of men get their claims and demands satisfied. Individually our status will be determined by the life we lead in a community and by the intelligent interest we display in matters of importance to live-stock owners.

In questions regarding the breeding and feeding of animals, we ought to be consulted far oftener than we are. The haphazard feeding of live-stock without any regard to economy and suitability has on every hand been far more prevalent than is desirable. The general practitioner knows this to be a rock-bottom truth, for every day he has noticed examples of wasteful and erratic feeding. The men in the stock-owning line who really understand the value of balanced rations are still lamentably few. The development of pure bred stock is always an important matter for the veterinarian. The value of the animals he treats must be the lever which lifts him to the plane of high prosperity. The veterinary profession is an honourable and scientific one, and it must ever be our aim to have it so regarded by the people who employ us. We must be up-to-date in our knowledge and our treatments, and produce the best results that it is possible to obtain in the prevention of disease and the fight against it. We have no patience with the men who make veterinary practice merely a matter of commercialism. They will never get beyond the region of phantoms and shadows. It is an increase of the number of men who struggle towards the light of a better day and era that we desire to see. We want more men that read, write, and think. To advance and grow we must always be paying attention to improvement of our veterinary education. Theoretical knowledge must ever widen and deepen, for it is the foundation of all applied science. Our clinical education must constantly be improving and in the best teaching clinical material must be plentifully available. In the coming reconstruction we must endeavour to be awake enough to make a strong call on the State to support a high degree of development in the clinical and applied subjects necessary to make a well-equipped veterinarian. G. M.

ANIMAL FOOD.

It is surprising and regrettable that as island homes we have not in the past devoted more time and thought to the production of artificial feeding stuffs for animals. We have been busy enough studying dead languages and looking on them as necessities for the living of a full life; but science and research bearing on things that sustain creature vitality have been hardly ever considered and seldom probed and sounded. The situation as regards the feeding of animals

at the present time is as difficult as that connected with the sustenance of men, women, and children. Politicians on the make have discussed trade, finance, voting power, laws, temperance, and deceased wife's sister's bills, but who ever heard of an evening in Parliament being devoted to a discussion on the feeding or breeding of animals? Yet it is on basic and fundamental things such as these that the existence of nations and peoples depend. In ancient times we often heard that a country or individual was prosperous because "the flocks and herds increased," but nowadays the phrase and its significance seem to have sunk into oblivion. Ground nut, sesame, coconut, cotton, and a great proportion of linseed cakes—where do they all come from? Not from these isles. Is it impossible for us to make any good cakes of our own, or to find real substitutes for any of the foreign and imported ones? Can we not make any beneficial use of chestnuts, cultivate earth nuts, and grow more flax and rape? It is curious that no man yet appears to have discovered a real substitute for oats in the feeding of horses. Even with the lessons before us of times of great scarcity and lean periods following long and violent wars, we find little to indicate much versatility of mind or effort in the production of animal food substitutes. It is true that in the Franco-German War coconut cake was largely used as a substitute for oats for horses, but this is only one instance that we can come across in history.

The common nettle, comfrey, the green leaves of heather and even mistletoe have good nutritive value for some animals. More might be done with sorghum. We all know that oat-straw is a valuable feeding stuff, but how many of us know the worth of the leaves and pods of bean and pea-straw? It has always seemed to us that a good store of food may be procured from the acorn. Possibly it will be necessary to submit it to some simple preliminary treatment, but science may be able to find a way to use it profitably and produce it more plentifully. The scientific investigation of possible and prospective food stuffs needs much stimulus here and will render us a better return for brain sweat and hand work than many of the efforts we daily indulge in and deem indispensable to progress. As we go to press we read (Rev. Gén. de Méd. Vétérinaire) that the French are experimenting with sea-weed, with a view to obtaining a substitute for hay in the feeding of horses. A factory to deal with an almost limitless supply is being put up at Pan-An-Lam in the district of Tréguier.

G. M.

Original Communications.

REPORT ON IXODIC LYMPHANGITIS

(GERMAN EAST AFRICA CAMPAIGN, 1916-17)

MADE TO THE A.D.V.S., DAR-ES-SALAAM,
BY CAPT. E. M. JARVIS, S.A.V.C.

Synonyms.—Tick pyæmia.

Definition.—An inoculable disease originating in primary causes through the agency of amblyomma ticks as mechanical carriers. The infective organisms are of telluric origin, and the invasion is usually of mixed micro-organisms. The disease is usually characterised by suppuration, ulceration, and necrosis.

Species affected.—Horses, mules, asses, and more rarely cattle and sheep.

History.—In a consideration of the history, separate and pure infections of the major number of the micro-organisms have been reported as follows :—

1. The Priesz Nocard, discovered in 1892 by Nocard.
2. The Cryptococcus Farciminosus, discovered in 1873 by Revolta.
3. The Bacillus Necrophagus, discovered in 1890 by Bang.
4. The Staphylococcus Pyogenes albus, discovered in 1880 by Ogston.

The first gives rise to a disease known as ulcerous lymphangitis in equines or pseudo-tuberculosis in sheep, the second to epizootic lymphangitis, the third to necrobacillosis, and the fourth to certain pyæmiae and septicæmiae. These organs are ubiquitous the world over. The condition described herein departs in history from each of these.

A disease resembling the one herein described was met with in the Manica District of S. Rhodesia 1888–1904, and puzzled the veterinarians of the day. When the present writer was sent to this District, (1901), he noticed that this disease did not follow the ordinary laws of contagion, but observed the amblyomma ticks caused the first lesions, and the subsequent progress of the disease could be traced to this source.

The second occurrence in the writer's knowledge appeared in this campaign along the Kilossa-Iringa road, where he noticed the causal tick and warned the G.O.C. of the 1st Mounted Brigade of the danger, and the means of prevention. A few cases of infection occurred, but many animals were saved. The disease now cropped up along both main roads to Iringa, the second being from Dodoma.

Geographical Distribution.—One may safely aver that it will occur coincidentally with the distribution of the amblyommoid ticks, *i.e.*, roughly between the tropics in Africa.

Etiology is largely dependent upon locality and existing local infections. One may occasionally get pure infections, but in the majority of cases one can find—

1. Priesz Nocard bacillus.
2. Cryptococcus (or saccharomyces), farciminosis (rarely).
3. Bacillus necrophagus.
4. Staphylococcus pyogenes albus (chiefly in lung lesions in donkeys).
5. A bipolar bacillus 2·5—μ4μ × 0·75—1·0 μ, unnamed, may be adventitious.
6. A coccobacillus 1·5 μ × 1·0 μ, unnamed, may be adventitious.

Having no proper means of cultivation and sterilisation, the growths of the organisms in culture media could not be properly observed.

Toxæmia.—Many of the wounds were tested with blue litmus and showed a strongly acid reaction, and there is little doubt that a powerful toxin is liberated, and is the principal destructive agent.

Clinical Symptoms.—These are of different types, largely dependent on the infective organisms present.

(i) *The Pedal Extremities.*—Lameness first appears. On examination and careful search, either a male "variegatum," with rostrum deeply embedded, can be detected, or a tiny hole seen, which on pressure yields a pin-point of yellow exudate. The part affected is extremely tender to the touch.

In a few hours necrosis begins, and in three days an island of dead tissue exists, which is surrounded by a fissure by about the fifth day. The necrosed area becomes more or less detached and can by traction be removed with a pair of forceps. On examination this dead tissue resembles a large tooth and its root. It is grey in colour and has lost its organised appearance, although it is tough and not friable. Its roots are usually surrounded by a thick yellow pus. The ulceration, unless given early surgical treatment, will be progressive, and involve the whole of the soft cellular tissues of the foot; in others a quittor may form, and the tortuous sinuses will be difficult to follow. The resulting crater when the slough has occurred is extremely angry-looking, and in some cases lesser cavities may be detected, containing a sero-purulent fluid or inspissated pus, at times of a very unpleasant odour. Bacilli of necrosis and Priesz Nocard are mainly present.

(ii) *The Body.*—The primary lesions can be looked for between the fore-arms, on the prepuce, penis, anus, vulva, or tail, as the commonest seats, more infrequently on the belly. In other areas the first

stage is not so readily found, when covered by hair or where the integument is hard and tense. The lesion may commence in similar fashion, but rarely extends to such a depth as at the foot. On the softer and more elastic skin a mushroom-like elevation, about the size of a two-shilling piece, forms in a day or two with the tick's rostrum embedded in the centre. About the fifth day the elevation has lost its hair and begins to show a well demarked line of severance. About the tenth day it assumes a dried-up, wart-like appearance, and can be detached by traction and the aid of forceps. Its underside is convex, coated with pus, often with a fœtid odour ; it leaves a crater-like ulcer with lesser cavities branching off, filled with a yellow or faintly brown cheese-like, or inspissated pus. The crater, if not attended to, will frequently spread like a rodent ulcer. From this first elevated lesion a condition of lymphangitis may appear, spreading in the direction of the afferent lymphatics to the gland draining the area. In the Rhodesian outbreak the lymphangitis was always a precursor to the condition of pyæmia, but in G.E. Africa only occurs in about 5 per cent. of cases. The lymphatic vessels in that outbreak never stood out in bold relief, became hard and tense or corded as they do in German East Africa.

The typical course is the appearance of a diffuse swelling, followed by a large abscess developed in the nearest lymphatic gland. The abscess is from the size of an orange to a cocoanut, hard and tense, and remains covered with hair. It is deep-seated, shows very little tendency to point or soften at any particular spot, and if unopened the swelling may gradually subside, rarely bursting open. The contents are like Nestle's condensed milk in appearance, white, viscid, cohesive, and not readily spread on a glass slide. When the abscess has been in existence for some days a considerable quantity will remain semi-adherent to the cavity, and require removal by traction or scraping.

In the typical cases met with in G. E. Africa, the corded lymphatics showed lenticules the size of a walnut with more tendency to point and break. They are never smaller in dimensions and are more regularly placed than in epizootic lymphangitis, do not shed their hair or take on a polished appearance. They usually occur along a straight line. When preserving these characteristics were only seen along the course of the jugular furrow or lymphatics of the neck, pointing out the seat of invasion, either between the angles of the lower jawbones, or in the mane. The lymphatic vessels usually return to normal soon after the lenticular abscesses arise.

On the areas of hard and tense integument no lymphangitis nor large abscess appears. Here the tendency is to spread by sinuses in

the deeper skin layers. In the superficial layers the sinus will enlarge to a small abscess which will burst of its own accord as the integumental covering is frail and is easily injured—e.g. when an animal rolls. The cavity is like an ulcer, crater-like, and has invariably one or more small sinuses leading off and opening into other lenticular spaces. In a few days these may become confluent, and a large patch of skin from the size of a five-shilling piece to a dinner plate slough away, leaving an angry, uneven, pitted surface. It spreads and extends under its periphery, the marginal skin being underrun, with further consequent necrosis of the edges. A plentiful yellow seropurulent discharge constantly collects under the free edges of the skin. In long-standing cases and in cases unrelieved by surgical treatment metastic abscesses do frequently occur in the lungs, liver, and spleen. In infections conveyed by ticks near the anus a chain of abscesses may develop in the abdominal lymphatic glands, underneath the bony spine, with the presence of a fistula linking up the abscess with the intestinal lumen into which it discharges. The organisms present, are principally Priesz Nocard in the abscesses in donkeys' lungs complicated with staphylococcus pyogenes albus. In primary lesions the bacillus necrophagus is also found.

(iii) *The Skin Lesion.—Dermatitis* would appear to arise as a result of a generalised infection, as it was only noticed in cases where lesions had arisen from tick infection in some localised part of the body. It was only observed at the first rains of the season just before Christmas, 1916. The first appearance is of small, raised, lens-shaped elevations of the size of a small split pea. There is no sign of a pustule, and the lesions are hard and covered with hair associated with a staring coat. In about three days the hair becomes matted together on the elevations as a result of a slight serous exudation. The cutis deadens and in five or six days becomes detached. It is not easily shed, being semi-adherent through the hair still holding to the live portion of the follicle. The connective tissue though necrosed still has considerable tensile strength. It can be removed by traction and a pair of forceps, when a yellow seropurulent fluid is seen attached to the internal face. After removal the lesion of the live body is crater-like and partly cicatrised. Most of the exquamated tissue in nature remains attached for a long period, gradually disappearing as dandruff or scurf. The skin lesions of the hairless parts, nasal bridge, lips, ears, and prepuce, as also the lower extremities, seldom show any seropurulent fluid, and the lesions remain attached like so many small papillomatous growths. These dry and harden and eventually fall off in about a month, with hardly any trace of a scar. In the lower part of the legs if unassisted to desquamate by oleaginous

preparations, dirt causes irritation, and the deep-seated lesions of the foot, as described above, arise.

A further reason for arriving at the conclusion that the condition is one of a generalised infection is often borne out by the occurrence of abscesses in the lungs or lymphatic glands, or death intervening as a result of septicæmia and pyæmia. In some of these dermatitis cases ulcerlike lesions may be detected on the mucous membrane of the nasal septum. They are of a size of a threepenny-piece and seldom extend deeply to the septal cartilage. Occasionally a few may be seropurulent and confluent, but are usually dry and show slight inflammatory processes. In all these cases there is a hard swelling in the submaxillary lymphatics with abscess formation, which on incision exudes the condensed milk-like pus. The open abscess takes on an ulcerous appearance and is often of a rodent nature. The organisms found are Priesz Nocard, staphylococcus pyogenes albus, and necrosis organisms.

(iv) *Acute Type.*—Sudden death by a toxæmia in a few hours as a result of septicæmia.

(v) *A Superposed Epizootic Lymphangitic Infection.*—Shows the lumen of the lymphatics of an uneven calibre, greater and more persistent thickening of the walls, abscesses at irregular intervals, forming a chaplet or rosary. The external surface is polished and free of hair, the pus of the consistency of Camembert cheese; there is freer proliferation of the tissues; in fact in many areas, as in the inner cavities of the eye, fungoid excrescences appear. About the head the disease is prone to penetrate the bony structures. A number of cases, particularly in Abyssinian mules, were pure invasions of the cryptococcus farciminosus, but most were complicated with both ulcerous lymphangitis, and necro-bacillosis.

Having had over 1,000 cases of lymphangitis ixodica under treatment in horses, mules, and asses, the following observations were made:—

1. That horses and mules always show external abscesses before their appearance in the internal viscera.

2. That asses seldom show external abscesses; these in the majority of cases appear in the lungs, where they may be unsuspected, until condition is lowered, when they quickly give rise to evidences of pleurisy, dyspnoea, slab-sided appearance over the ribs, depressions in the intercostal spaces, dull sound on percussion, accompanied by a grunt. Coughing is slow, painful, and restrained in volume.

Cases in Masai foals in their infancy have been noted, and the view, that the infection is contracted at this time in a good many cases may be accepted, as one sees quite a number of one- and two-year-old

donkeys stunted in growth with harsh coats, of slab-sided appearance and continual " bad doers."

Necro-bacillosis develops at the seat of the primary lesion in asses.

3. The Dermatitis is more inclined to be of the papillomatous variety in mules and donkeys and is confined to the nasal bridge and ears.

4. In the Monica outbreak lymphangitis was always a precursor of pyæmia, but in G. E. Africa it is rarer.

Bovine Lesions are few, and consist of a fungoid elevation of lesser extent and localised to the seats of attachment of the ticks. In rare instances the button-like elevation was seen with necrosis and sloughing; an occasional abscess was detected in the prescapular, postscapular and precrural glands, usually undetectable in life, only coming to view on meat inspection.

Morbid Anatomy.—In cases where the saccharomyces are absent the enlargement of the walls is temporary, with no resultant appreciable thickening of the lumen of the lymphatics. The abscess formations are practically confined to the lymphatic glands, following in unchecked invasions along the afferent channels, the organisms being arrested in successive glands in turn. The cavities caused by accumulations of pus are sinuous and the pus frequently finds its way into the connective tissue between the muscles. In Manica there was seldom much cellulitis around the infected zone, but here it is often acute, hæmorrhagic, and easily bleeds. Feeble attempts to form new tissue are often seen, but the destructive processes are more potent. The surrounding areas show a yellow gelatinous exudate in horses and mules, and a white gelatinous one in asses. In acute cases metastasis occurs with the appearance of the abscesses in the lungs in the mediastinal glands, localised purulent foci under the pleura, more rarely in the liver, and still less frequently in the spleen and kidneys. A chain of abscesses from a primary seat around the anus is occasionally seen under the vertebral region. To sum up, abscesses may be expected to appear along the courses of the afferent lymphatics, draining the part where the primary infection takes place.

Dissemination of the Virus.—In Southern Rhodesia the disease was almost entirely spread and mechanically conveyed by the amblyomma variegata. On the disappearance of the tick—brought about by hand picking and dipping—the disease entirely disappeared, and has not been seen since the year 1904. Prior to the protective measures being in vogue—*i.e.*, 1888-1901—the disease was on the increase, and was so virulent that it was impossible to keep horses and mules in the Manica district without contracting the disease. Destruction of infected stock by earlier veterinarians proved abortive.

After having had the opportunity of examining over 1,000 cases on the march and in hospital, it may be accepted, speaking for German East Africa, that—

(*a*) Not less than 75 per cent. contract the disease through the agency of amblyommoid ticks.

(*b*) The second means of dissemination is derived from the primary wounds caused by the amblyommæ.

(*c*) Twenty per cent. are contracted through the agency of stomoxys by settling on infected wounds, deriving the causal organisms therefrom, fly away with infected probosces to stab otherwise aseptic wounds with extraneous vitiation.

(*d*) The remaining 5 per cent. are directly inoculable through the entry of dirt organisms by means of thorns, nails, and by gravity into deep fissures like cracked heels or deeply lacerated wounds.

At first sight it may well be conjectured how one class of tick should be so pernicious and not another. The explanation lies—

(*a*) In the length of the rostrum, enabling the tick to penetrate through the cutis to the connective tissue.

(*b*) In travelling along the ground this class of tick keeps its rostrum pendulous and so scoops up the virus off contaminated ground.

(*c*) The polyandrous habit aggravates the lesion.

(*d*) The tick has considerable longevity, and has the opportunity of leaving an infected host and attaching itself to another. The tick comes away, as a rule, when necrosis has set in, and looks for healthy tissue in a second host.

Stomoxys and tabanidæ have been observed to infect unabraded tissue by direct infection, through the agency of their probosces penetrating to deep tissue; like the aforementioned ticks Muscids undoubtedly do play a part in carrying infection, but rarely, though, as they are unable, as a rule, to do more than settle on parts exposed to ærobic conditions. The long mouth-parts are just the instruments to plant anærobic organisms into media that suit them, the tiny sinuses caused being sealed by a serous or sanguinary clot and so closed to the entrance of air.

(*e*) Tick birds are no doubt also mechanical carriers as they peck at the open wounds and go from one animal to another.

Prognosis is favourable whilst the infection is superficial, and treatment can be applied to destroy the causal organisms. It is unfavourable when the infection is deep seated and penetration has taken place into sheaths, bursæ or osseous tissue. Destruction is

then the most economical; 60 per cent. are temporary, 25 per cent. prolonged, and 15 per cent. incurable, the latter chiefly invasions of the lungs and other internal organs.

Re-occurrence.—In the experience gained in South Rhodesia the farmers stated that the disease re-occurred. The writer in all cases that came to his notice found that the external lesions were the result of a fresh invasion by ticks. Further, the writer knew cases of animals (recovered) ten years after the ticks had vanished and which never showed another lesion.

Surgical.—(*a*) Open up the wound, making deep incisions to allow free drainage and exposure to ærobic conditions.

(*b*) Remove all necrotic tissue by traction, excision, and scraping. It is most important to do this thoroughly.

(*c*) Remove all pendulous and underrun tissue like skin, fungoid, new growths, etc., as the organisms propagate thereunder and the lesions spread.

(*d*) When opening an abscess remove part of the lips of the wound and make a crater to allow of thorough antisepsis and a clear view to the interior so that lesser sinuses and pockets can be brought to view and properly cleansed.

Antisepsis.—The ordinarily used antiseptics like boracic acid, chloride of lime, carbonic acid, coal tar derivates, solutions and tincture of iodine were of little avail. Inorganic salts, like sulphates of copper, zinc, etc., which form a dry scab at the base, and an albuminate, only served as a covering, creating a more or less anaerobic condition without destroying the toxine and its necrotic effect.

The first successful treatment consisted of

Iodine Resub	1 part
Ac. Carbol.	3 parts

and was applied with a feather or brush and carefully inserted into fissures and depressions.

For use on sinuses and fistulæ the following lotion was made use of:—

Hydrarg. Biniodidi Rubri	ʒi
Pot. Iodide	ʒi
Aquæ	Oi

The shortage of iodine and its compounds, owing to war conditions, necessitated the finding of a substitute.

(*a*) Powdered Calomel.

(*b*)

Acid Arseniosum ..	2 parts
Hydrarg. Perchlor ..	1 part
Farinæ Tritici	20 parts

were both tried, when drugs ran short " in the field," with some success in the more superficial cases. The quittor cases and deeper lesions had to be given up as hopeless, until the author tested the wounds with blue litmus paper and found there was a strong acid reaction in nearly every case. He determined to neutralise the destructive toxine with a solution having strong penetrative power. Liq. ammon. fortiss suggested itself. Accordingly solutions were made up as follows :—

1. Ammonised vehicles carrying iodine.

These gave excellent results, but again quantities of iodine were unobtainable. It was thought that possibly an ammoniated solution of an inorganic salt might be effective, and

2. Cupri Sulph. ʒj.
   Ammon. Carb. ʒx
   Aquæ Oj

was tried. A drachm of liq. ammon. fort. was added to clear the solution and give an excess of free ammonia. This preparation acted like magic as compared to anything else used. Cases which had formerly to be destroyed are now cured. A cure is effected in a third of the time formerly taken. Better results were unlikely, and it is now practically the only dressing used.

It has other merits :

(*a*) It is repellent to both tick birds and flies.
(*b*) It dries up the fluid discharges.
(*c*) Is economical in price and saves covering with wool, etc., in slighter cases.
(*d*) Has antitoxic properties.

Medicinal.—Administrations of the iodides of mercury and arsenic were tried with a small measure of success, but in view of iodine problem are hardly sufficiently beneficial to warrant their continuation.

Prophylaxis.—(*a*) In Southern Rhodesia the writer found from extended experience that if ticks were pulled off within twelve hours no infection resulted; in other words, the infection only took place when the rostrum penetrated to the sub-connective tissue. The tick burrows but slowly, and takes 18 hours to accomplish his object.

(*b*) Again, even up to 24 hours the disease could be prevented by pulling the ticks off (rostrum and all), squeezing the tiny sinus, which exudes a serous discharge, and painting with iodised phenol 1:4. This method was eminently successful, and all the B.S.A. police were supplied with a small bottle and brush, and not one case occurred in the force after its practical application.

In this campaign, on the march, the first principle was applied with a good measure of success in the 4th S.A. Horse. The second

measure could not be applied, as drugs were unobtainable owing to campaign conditions.

The two above are the only practical ones "in the field." In civil life the following can be adopted, but it is a lengthy course, occupying a few years.

(*c*) The eradication of the ticks by dipping and hand picking.

Females are few, and so large as to be readily seen and destroyed before they have a chance to lay their eggs.

(*d*) The destruction of flies by poison and destruction of refuse to prevent formation of breeding grounds. It should be here remarked that amblyommoid tick eradication has been completely successful in S. Rhodesia, and since 1904 not a single case has occurred. The equine population has grown from practically *nil* to thousands. Stomoxys are present, but have no chance of procuring the virus from the tick infected wounds.

(*e*) In veterinary hospitals, stables, regimental lines, and transport columns it is recommended that malignantly infected wounds should be segregated, as for contagious diseases, and all such cases kept a good distance from the other patients, for fear of dissemination by flies. All discharging wounds should be kept covered with generous pads of antiseptic wool, tow, and bandages.

It may be asked how one is to discriminate. The following course is adopted here :—

Isolate

(1) All cases of tick lesions.
(2) All ophthalmic cases.
(3) All cases with aeropurulent discharges.
(4) All necrotic wounds.
(5) All wounds into caseous tissue.
(6) All nasal discharges.

When in doubt, examine microscopically. Until the veterinary hospital was equipped with the necessary wards, there is no doubt that patients above suspicion became infected through the agency of flies.

Vaccines.—Major Montgomery, E.A.V.C., has a vaccine for the Preisz Nocard bacillus.

Differential Diagnosis.—As pointed out above, the disease is a mixed infection in German East Africa. The microscope should be used in cases of doubt. Mallein can be used to differentiate from a glanders infection.

Seasonal Occurrence.—There are few adult amblyomma in the dry season or winter months ; cases of infection are then rare. Prevalence, September–May.

NOTES ON THE TREATMENT OF EQUINE SPECIFIC OPHTHALMIA.

By MAJOR F. CHAMBERS, F.R.C.V.S., A.V.C.

SINCE writing on the above subject,* when I advocated the injections of Lugols solution into the supra-orbital fat, I have had a further opportunity of investigating this peculiar affection. Laboratory methods have, of necessity, been rough and the amount of available material has been small.

Specific ophthalmia, as met with amongst Army horses, is of two types :—

(*a*) The real or specific ophthalmia, characterised by acute pain, photophobia, an acute inflammation of the outer rim of the cornea, which gradually extends to the centre, a profusion of highly injected vessels into the cornea itself, and a gradual infection of and disorganisation of the whole eye. There is always a rise in temperature.

(*b*) A spurious or traumatic ophthalmia characterised by an acute inflammation of the cornea with seldom other sequelæ.

The former may, if not treated immediately, end by pus formation in the interior of the eye. If the attack is periodic it belongs to the first class.

The second class, which is most common where wholesale dipping of animals in calcium sulphide solutions is in practice, is due, I am inclined to believe, to the constant immersion of these animals in this agent. My suspicions were directed in this channel during the summer of 1917, when I was able to observe the results in a formation which were dipping their horses at frequent and regular intervals in a solution of calcium sulphide. Before dipping specific ophthalmia was almost unknown, but after dipping had been in progress for some time a form of ophthalmia appeared, and a large number of animals became affected. I advised the injection of Lugols solution, knowing full well the excellent results that I had obtained in the treatment of specific ophthalmia when investigating this disease in 1914. To my surprise I was informed that the treatment in these cases did little to effect a cure.

The second link in the evidence was forged when experimenting with the use of sulphurous anhydride gas in the treatment of mange. A certain amount of gas always escapes from the collarette from the leeward side and causes a distinct corneitis with acute pain. This would disappear in two days, but after several fumigations a kind of ophthalmia appeared which was troublesome and did not react to Lugols solution. Once cured it did not reappear, although all these

* Journal of Comp. Path. and Therapeutics. Vol. xxx, p. 136.

cases were kept six weeks under observation. If this had been true specific ophthalmia it would have reappeared in one or more of these cases, as Lugols solution was only used in a few of these cases. Calcium sulphide solution, as prepared and used in the Army, may be said to contain :—

Calcium, stated as CaO	0·937 per cent.
Total sulphur	1·972 „ „
Total sulphide sulphur	1·517 „ „
Sulphur, as thiosulphate	9·430 „ „
Sulphur as sulphate and sulphite ..	0·025 „ „
CaO, as sulphide and polysolphide ..	0·514 „ „
CaO, as thiosulphate	0·376 „ „
CaO, as sulphate and sulphite ..	0·044 „ „

The pentasulphide is the most dominant sulphide, the occurrence of sulphur in considerable excess of that required is the rule rather than the exception. The formula of the mixed dip would be :—

$$3\ Ca\ (OH)^2 + 12S = 2\ CaS_5 + Ca_2So_3 + 3\ H_2O.$$

According to the equation we should have one-third of the lime and one-sixth of the sulphur passing into this sulphide. After an animal has been dipped in freshly-prepared dip, oxidation takes place and in a short time practically all the pentasulphide is transformed into thiosulphate. Oxidation also takes place in the tank to a considerable degree. After being in use some days the amount of thiosulphate present in the tank must be considerable. The action of calcium sulphide solution depends upon the presence of calcium pentasulphide. Calcium thiosulphate has no curative properties, but it is a very powefrul irritant. It is this salt that, in my opinion, causes this form of ophthalmia. There is no means of standardising a calcium sulphide dip, which is in constant use similar to the method which can be used with arsenical solutions.

ADENOMA OF THE KIDNEY IN A HORSE.

By LIEUT. J. J. AVESTON, M.R.C.V.S., A.V.C.

THE subject was a 7-year-old light draught gelding, admitted to hospital on October 9th, 1917, said to be suffering from debility.

On examination it was found that the horse was passing blood-stained urine, which, on analysis, showed that albumin was present in considerable amount. The pulse and temperature were normal, but the visible mucous membranes were very pale and anæmic in appearance. Rectal examination revealed nothing abnormal.

On the day of admittance to hospital the mallein test was applied as a routine procedure, but no reaction followed. Although the

appetite was good and remained so throughout, the patient gradually became more debilitated, and on November 7th, 1917, after a month's sojourn in hospital, he was destroyed. During the whole of that month the horse showed no signs of pain, or even discomfort. The urine remained blood-stained throughout.

The *post-mortem* revealed an enormously enlarged right kidney; its weight being 60¾ lb. It had actually extended over to left side, and enveloped the left kidney, which was normal. Notwithstanding the size of the tumour, an elliptical portion of the kidney remained, which appeared on section to be normal in structure.

A piece of the diseased organ was submitted for microscopical examination to Sir John McFadyean, who pronounced it to be composed mainly of adenomatous tissue.

BACTERIAL PYELONEPHRITIS IN A COW.

By G. GAIR, M.R.C.V.S.,
Conon Bridge.

Bacterial pyelonephritis is an inflammation of the kidneys usually of a chronic nature, and involving the renal pelvis and lower urinary passages. A variety of organisms may be found in these affections, such as staphylococci, streptococci, etc. These are all capable singly, or as a mixed infection, of causing grave pathological changes in the renal tissues.

The organism more frequently concerned in this affection in cattle, however, is the corynobacillus. In fact, with the exception of a few isolated cases in which the organism was found in horses, it is almost exclusively found in the urinary organs of cattle.

Until lately the disease was included among the ordinary purulent pyelonephrites, but is now known to be caused by a special organism, alone, or more frequently, in association with other pathogenic bacteria. The etiology and pathology of the disease have been studied by various writers, who all agree as to its polybacterial nature. It is more frequently observed in cows after calving, most probably injury to the genital passages favouring infection.

Lately I was consulted in regard to a cow which for nearly two months previously showed turbidity in the urine, and was believed by the owner to be affected with red water. From the turbid and muddy condition of the urine I suspected bacterial infection of kidneys and lower genital tract. On making a direct smear from the urine without centrifuging, and staining with Gram, I found the causative organism to be the corynobacillus. The organism is Gram positive, non-motile, 2μ to 4μ long by about 0·5μ thick, and is aerobic. They are irregular in length and form, and some appear as short rods, while

others appear larger, staining more deeply at polar ends and middle. Some show as elongated thread-like forms, and others are club-shaped, while budding and branching are also observed. They stain with the ordinary dyes, weak carbol-fuchsin, methylene blue, and carbol thionin blue.

In stained smears directly from urine a plain clumping of the bacilli is noticed. This clumping is well marked and is a special feature in the diagnosis of the disease. The picture is not unlike that seen in agglutination of the bacilli in typhoid when the clumping is complete. In stained smears from growth on ordinary agar the clumping is not observed. To eliminate the possibility of B. coli being present, some of the urine was plated on MacConkey's neutral red lactose agar, but no growth was obtained. On ordinary agar, however, numerous colonies were formed. Besides the corynobacillus, a number of other organisms were found, including staphylococci, a few streptococci, long and short chains, and pus cells containing bacteria and epithelium cells. It is of great value finding phagocytised bacteria in pus cells of the Gram stained smears.

These indicate the causative organism which shows so very well in the beginning of these affections. Only on a microscopical examination can a positive diagnosis be obtained, and a differentiation made between other forms of nephritis and tuberculosis of the urinary tract.

In the examination of a large number of urine samples, both human and animal, I find the following means of examination of value: In centrifuging a urine avoid as much of the supernatant urine as possible, as its admixture on the smear makes staining less satisfactory. Gram's method counterstained with Bismarck brown is most satisfactory. A loopful of egg albumen or blood serum to about twice that quantity of urinary sediment gives good results. Pathological urine has enough albumen to fix smear. Hæmatoxylin and eosin are excellent for epithelial cells, and Gram's stain for bacteria. By putting a little sediment on a glass slide with a ring of vaseline round it, adding a drop of Gram's iodine and using cover glass, we see the cells stained beautifully when examined with a $\frac{2}{3}$-inch objective.

Turbidity of urine, although most often due to bacterial contamination, may also be caused by phosphates or amorphous urates. Formalin and camphor are useful as preservatives for urinary specimens.

Since several years I have had an opportunity of examining a large number of pathological specimens of both human and animal urine, and it appears to me that the most important bacterial infections of a hæmatogenous nature are, in order of their relative frequency: Colon bacillus, staphylococci, streptococci, gonococci, proteus, typhoid,

and paratyphoid. Renal tuberculosis, for instance, is more frequently of a hæmatogenous nature than of an ascending infectious nature.

This particular case in the cow was treated three times daily for several weeks with boric acid in gruel, and subsequently an occasional dose of turpentine was given. Microscopical examinations of the urine were made at various intervals. The urine gradually became much clearer in colour, the organisms diminishing appreciably in number, but yet retaining the special feature of clumping, although the clumps were smaller in number and in size. Eventually the urine assumed its normal condition, the appetite improved, and after a period of over three months' illness the cow regained her former state of health.

BLOODY URINE.

By C. MAYALL, M.R.C.V.S.

In current contemporary periodicals there has recently been discussion on bloody urine. From a consultation of available literature I find that voidance of red blood corpuscles in the urine occurs in all animals. Distinct hemorrhages occur in the urinary tract by rupture of blood vessels. Hœmorrhages from the kidney arise through leakage from its finer vessels and more or less proportionate mixture of blood with the urine. Bleeding from the kidneys occurs through wounds, crushing and bruising, and is an accompanying symptom in purulent inflammation and cancer and other tumours of the kidneys as well as at times in acute infectious ailments.

Bleedings from the bladder, ureters and pelvis of the kidney occur in cystic and renal calculi, inflammations, catarrh and tumours of the bladder. In these cases vermiform or clotted deposits of blood form or the last emptied urine is blood-stained.

Hœmorrhage from the urethra in male animals, or from the penis, occurs from inflammation and injuries, and is characterised by dribbling of blood or the voidance of thread-like clots.

Sporadic hœmaturia occurs chiefly in cattle, and may arise from the kidneys or bladder. It may be an accompanying symptom of inflammation of the kidneys, and may arise where cattle graze on shrubs or in woods, or be an individual idiosyncrasy.

Causes.—Pasturing in woods, and the eating of irritant plants, ranunculacæ, anemone, spurge, dog's-mercury, broom, clematis, water pepper (polygonum hydropiper), whortleberry root, the resinous leaf buds of alders, oaks, firs, and pines. In misuse of diuretic remedies (juniper berries, cantharides) as well as in feeding smut and mould-spoilt food. It may also occur as a result of intensive feeding or in a quick change from poor to rich food.

Prognosis.—Favourable in early stage, unfavourable later on and where complications have arisen.

Treatment.—Mucilaginous drinks and milk. Laxative salts. Alum, perchloride of iron, sugar of lead. In constipation, calomel.

THE ASPERGILLIOSIS OF BIRDS, MAN, AND ANIMALS. A RESUME.

By FRED C. MAHON, M.R.C.V.S.,
Chiswick, W.

KOLLJAR divides pseudo-tuberculosis into two groups: (1) Due to bacterial origin; (2) of mycotic etiology—these being produced by aspergillii.

At a meeting of the Pathological Society of London, on February 21st, 1899, the President (Dr. Payne) in the chair, the discussion on pseudo-tuberculosis, which was opened by Dr. G. Sims Woodhead, the latter gentleman called attention to a case described by Professor Bayne, of Liverpool, which this writer had properly described as aspergillos-pseudo-tuberculosis, and this was in agreement with a similar condition so described by Kolljar. Dr. Washbourn, referring further to pseudo-tuberculosis, said: "The term was used to denote diseases which resembled tuberculosis in 'morbid anatomy,' but which were caused by other organisms than the bacilli of tuberculosis. Of late," he added, "a large number of such cases had been described by various observers. There were many organisms which produced similar anatomical lesions to those produced by the tubercle-bacillus. These organisms were, however, of a highly different character."

There were bacilli, such as the bacillus pseudo-tuberculosis, giving rise to caseating tubercles in many animals, and (*b*) bacillus pseudo-tuberculosis murium, causing caseating tubercles in mice, and the bacillus pseudo-tuberculosis liquefaciens, causing tuberculosis in the human subject, with similar lesions. In the rabbit there were various kinds of streptothrix, one such being described by Dr. Flexner in the human subject. There were also, again, organisms which did not belong to the class "bacteria," but were a form of mould, known by the term "aspergillii," which have been described as causing a tuberculous lesion in the lungs of the human subject, and also nematode parasites, producing tubercles consisting of giant cells, also epithelioid cells in the lungs of cats and the kidney of the dog, etc.

Dr. Woods Hutchinson had several specimens of the conditions, which would come under the heading of pseudo-tuberculosis, which he had obtained from the Zoological Gardens. One was a lung in which the lesion showed was due to an "aspergillus" taken from a

trumpeter bird, and he had met with similar specimens in ducks and parrots. It did not, however, in them appear to be of a highly toxic character.

So far back as 1809 the aspergillii came frequently under the notice of Dr. Woods Hutchinson, M.D., Professor of Comparative Pathology, U.S.A. This observer said, *re* distribution of tubercle in various species of animals: "It may perhaps be worth adding that although the lung proper of birds is comparatively seldom the seat of disease, the other parts of the respiratory tract, such as the great air sacs, are much more so. They are extremely prone to be attacked by pathogenic moulds, which form a thick layer on their inner surfaces, often making a complete cast of half of their cavity, and in some cases filling it up solidly, a thick white exudate not unlike cream-cheese being poured out from the walls, and upon this an abundant crop of a whitish-green or black in colour forms."

On May 13th, 1916, W. Scott, F.R.C.V.S., Bridgwater, published a most interesting report entitled "The Aspergillus Fumigatus Infecting the Nasal Mucosæ of Young Foals." Reference to such reports will tend to make the subject a theme of further study, and elicit some further facts, not only relative to its distribution, but the serious pathological changes invasion by the aspergillus can effect.

The aspergillioses of birds have of late years occupied the attention of many, and the occurrence of these organisms in one or other species of animals, and in man, induces my observations relative to the subject as a whole, by way of review. I encountered a case in 1916 in a young female swan which, after a short period of indisposition, according to her owner, suddenly succumbed. A *post-mortem* examination (microscopical) revealed the presence of a mould which, cultivated on potato, is identical with that in Mr Scott's contribution.

A. de Jong (Centralbl. f. Bakt., u.s.w.) in *Veterinary Record*, January 25, 1913, alluding to canaries, adds: "The results of my examinations of sick and dead canaries, which came from breeding establishments of a municipality in the Netherlands—after enumerating the history of the same in which the disease had generally been regarded as contagious—I noted the difficulty of respiration as a chief symptom, and that the affected birds bore fresh air and cold better than a sojourn in a heated, ill-ventilated room. Autopsy revealed small, whitish-yellow, crusty deposits at the entrance to the larynx, in the trachea, and at its bifurcation yellowish masses, with caseous centres."

Dr. Washbourn, again referring to pseudo-tuberculosis, said this term was used to denote diseases which resembled tuberculosis in morbid anatomy. One thing seems clear: naked-eye observations

as well as microscopical investigation, and in doubtful cases a series of cultivations, is absolutely necessary to determine what affection we are encountering.

D. A. de Jong, on examining several birds (living) found yellowish-white crusty deposits upon the tongue and palate. Yellowish white caseous centres of varying size were also found in the lungs and pleura, and occasionally on the peritoneum, also in the liver.

We thus see the mould is fairly wide in its distribution, and in the number of organs it attacks. Death occurs in consequence of the violent dyspnœa. The chief micro-organisms isolated were diplococci and the mould fungus " aspergillus fumigatus."

The diplococci had no pathogenic effect either upon canaries or upon the ordinary animals of the laboratory. The moulds, however, proved highly pathogenic for rabbits; on the other hand, attempts to infect canaries by inhalation of powdered and very pathogenic spores invariably failed. In the latter connection the author mentions that Schutz, in 1884, was able to infect some canaries in this manner, but he believes that other means of infection came into the question in this disease. In the case now under report he explains the origin of the illness from the unhygienic conditions under which the birds were kept, viz., in darkness, and narrow cages. He believes that the latter are really answerable for the pathogenic effect of the infection, which he presumes arose first from inhalation.

In support of this conception the author states that he succeeded in improving the condition of the affected birds by removing the unhygienic surroundings. After thorough disinfection of the cages and rooms with creolin, the introduction of fresh air, and avoidance of the administration of dusty or mouldy food (which he effected by scalding the food), improvement followed.

Pfeiler of Bromberg, commenting on the above, adds that he has occasionally seen similar anatomical and bacteriological conditions in the dissection of so-called " short-winded " birds. Birds affected with this disease usually continue to live for some considerable time in " good spirits," but are often affected with hoarseness, totally discontinue singing. According to Pfeiler's knowledge, this disease, which in Germany is specially observed amongst well-bred singing canaries of both sexes, is not regarded as infectious. That a cure cannot be attributable to better hygienic conditions is clear, Pfeiler thinks, to every one acquainted with the circumstances, for German canaries, in most breeding establishments, are kept unhygienically. —(*Berliner Tier. Woch.*)

Avian Aspergilliosis: *Aged Swan.*—An aged female swan which had died suddenly was taken by the owner from a pond at Shirley, near

Southampton, in the spring of 1916, and the lesions were principally confined to lungs and liver. Microscopic examination of the bodies, and cultivations as laid down in the translation by "W. R. C.," *Veterinary News*, March 18, 1911, were carried out. The work to me was new, so far as seeking for a further agent than tuberculosis in the swan was concerned, and induces my placing this note on record, as a new era seems to have dawned for practitioners who devote time and labour to elucidating facts in connection with bird diseases.

To Mr. Henry Gray, M.R.C.V.S., of Kensington, whose valuable records and investigations are well known—or should be—in this direction, I think we as English veterinarians owe much; also to our American cousins, who have produced many fine works dealing with the subject.

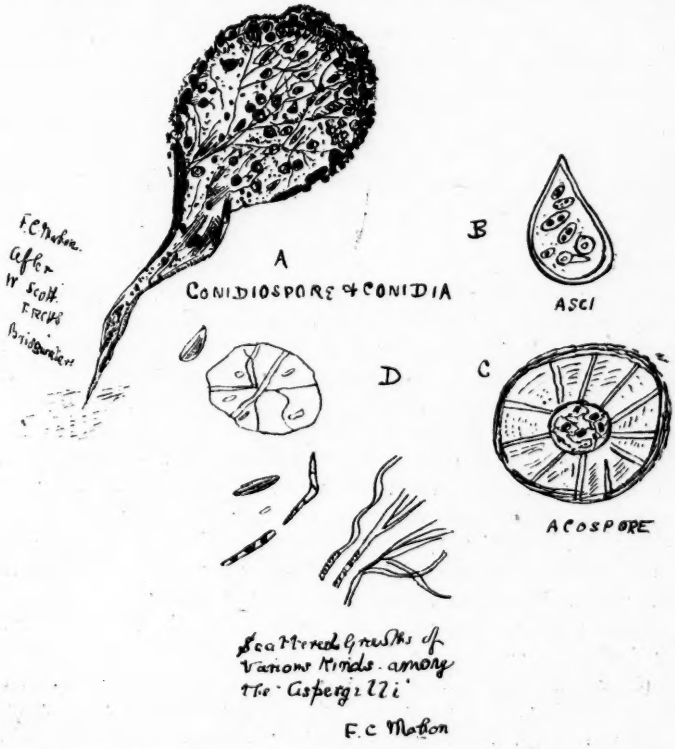
Cage birds—many of them valuable to owners not only for their rarity but for the trouble and expense in procuring the same from remote corners of the globe—the prize strains of fowls, etc., kept for show purposes, likewise those for table consumption, offer a field of exploration, and new ground for the rising generation of practitioners.

History of Swan.—Briefly, in this case we had an inciting cause or condition inducing propagation of a disease, etc., by the long, drawn-out terrible winter of 1915-16 in Hampshire and the southern counties. The female bird had been apparently in fair health, so far as the owner's judgment went, although at times dull and off-feed, with hoarseness and, as owner said, stuffiness, and attempts to get rid of some offending body. One marked feature of the investigation was the number of starlings—usually birds which can withstand cold—being found dead on and around these waters. A few I selected showed the lesions—some pronounced, others less so—of the "pseudo tuberculosis aspergilliosis," and I am wondering whether the one cause at work affected the swan as well, or whether the water was the source of contagion, or rank weeds around the pond, by harbouring the mould in various stages of development. Another fact which must not be overlooked: oats, bran, bread, etc., were given at times by owner, being thrown on the grass around the pond, also by neighbours, with additional provender of a medley character.

The appearances *post-mortem* of the swan, especially the deposits at the bifurcation of trachea into larger bronchi, the deposits in air-sacs. the tubercles and deposits on liver and its capsule, betoken something out of the common, and, being interested in reading Mr. W. Scott's account of the invasion of the nasal mucosæ by the aspergillus in fowls, led to further research. I elicited further facts from the owner, viz., that the swan often appeared, to quote his remarks, "bronchial," and further she had for some weeks been gradually

losing flesh. She was emaciated beyond words on making the autopsy. I searched for intestinal and tracheal parasites, but found none; for tumours, for pyæmic, etc., abscesses, but with similar result.

Re Cherelein's find, as translated by "W. R. C.," I experimented, as did he, with the fibrinous material from the air-sacs of the lungs, and found a mycelium present; also in the pseudo-tubercular growths in lungs and liver upon gelose and potato, and found the aspergillus



present. The appearance of the growths under the microscope was identical with Mr. W. Scott's drawing in the fowl, which I take the liberty of re-producing.

The disease "aspergillus fumigatus" therefore appears to be met with other than in cage-birds or horses, for rabbits, swans, geese, pheasants, and starlings, etc., fall victims to its invasion. It thus appears fairly universal, and perhaps has in the past accounted for

many deaths attributable to poisons accidentally picked up, or maliciously given, as sole factors in producing a large death roll when other causes—among them, for example, this active agent—are at work.

I should feel obliged by any reader giving me any standard work in which the "aspergillus fumigatus" is broadly treated, for future study and reference, and as space forbids must draw these notes to a conclusion.

Poisoning by Mouldy Fodder.

By Professors Albrecht and Harz, Munich.

In a dairy of nine cows and a heifer the whole of the herd were suddenly attacked with inability to masticate or swallow their food, or, after twenty-four hours, to drink. Respiration was difficult and painful, and the limbs cold. At first there was diarrhœa, afterwards constipation. The temperature varied from 38 deg. to 38·9 deg. C. The heifer and three cows were slaughtered on the seventh day; the others recovered.

Post-Mortem Examination.—On *post-mortem* examination the mucous membrane of the abomasum was of a deep red colour, and contained a quantity of grey-coloured mucus. The small intestine, particularly the duodenum, was also congested and covered with erosions, the contents containing a number of blood-clots. The hay was suspected, and a sample sent to Munich Veterinary School for examination.

Cultivation experiments showed the presence of:—Thichothecium (cephalothecium) roseum; mucor racemosus; chortomium viridé; aspergillus repens; and aspergillus ochraceus.

Experiments. Two goats were inoculated with both species of aspergillus, without any effect, and the authors suppose, therefore, that this animal is immune. The authors consider that both the aspergilii possess very virulent properties in the ox. (Wochenschrift fur Tierheilkunde, Sept. 22, 29; Oct. 6, 1908, pp. 431, 449, 461).

(Cherelein's find in avian aspergillosis, to which it gives the name of pseudo-tuberculosis, to growths which occur in the liver of turkeys, about the size of a pea, whitish in colour, and analogous to tubercular lesions. His microscopical examination, after scrapings stained by "Zeehl's method," showed no acid-fast bacilli. Examination of a small portion of tumour from the liver revealed a mycelial filament, devoid of spores. Cultures upon potato and gelose produced negative results. In bouillon they remained sterile).

Histological examination showed the lesions to be tuberculous, the centre of which was constituted by a filling of mycelium, and the periphery by a ring of epithelioid cells. They were, therefore, pseudo-

tubercular in character, and of mycotic origin, the causal agent of which was probably the aspergillus.

Fumigatus. The translator of Cherelein's contribution, W. R. C., adds: "The well-known similarity to the naked eye of the lesions of aspergillus and tuberculosis renders it very possible that the former, at least in birds, in which it has hitherto been chiefly found, is really more common than is generally supposed."

Translations.

THE HORSE LAZARET, ITS SIGNIFICANCE, DEVELOPMENT AND PRESENT POSITION.

By WILHELM RODE, of the Hanover Veterinary School.

(1) Veterinary Service in the Field during the First Months of War.

Rode only thinks regretfully of his veterinary activities at the beginning of the War, for these consisted of the treatment of slightly ailing or wounded horses, whilst those unable to march in the quick advance of the army were simply killed or left to their unhappy fate. As a result of failure or almost complete lack of due foresight, gigantic losses occurred which not only caused great financial damage, but irreparable injury to a good nucleus of horse material. The reputation of the Veterinary Officers' Corps, as a result of faulty preparation and niggardly treatment of the whole veterinary organisation, suffered severely. It was soon recognised, however, that to remedy this unfortunate state of affairs the providing of horse collecting stations and horse lazarets, as well as a thorough reorganisation of the army veterinary affairs, was absolutely essential. In numerous letters from the field and publications in the lay press a demand for improvement was prominently urged.

(2) What is the Object of a Horse Lazaret, and Wherein Lies its Advantage?

The chief function of a horse lazaret consists in the taking in and care of sick, wounded, and over-worked horses behind the front. By this means the marching troops are relieved and a better and more thorough treatment of sick animals effected, because sufficient stores of remedies and instruments are available, and a fixed control can be exercised by a veterinary and responsible personnel. Whilst in troops on the march a separation of horses with infectious illnesses is impossible—as the great spread of mange and glanders in the East has shown—yet in the lazarets suitable measures can be taken. For the eradication of transmissible infectious diseases the horse lazaret

is of supreme importance. This must, however, be completely separated from the depots if a fresh relay of horses is supplied from the depots to the troops. These horses must, as far as possible, be free from disease, which, where the depot is in contact with the lazaret, is impossible to accomplish. The lazaret furnishes the veterinarian with a wide and excellent field of work, in which every ounce of his ability can be used in the interest of the State and for the cure and benefit of suffering horses. Many company veterinary surgeons who find too little to do among a column of 150 horses, because the worst cases are not treated there, can be better employed in a horse lazaret.

(3) Development of the Horse Lazaret.

The veterinary service in previous wars played a very subordinate part. One prominent Prussian in the Franco-German War, 1870–1871, held that a good shoeing-smith was of more value than a veterinary surgeon. Schreiber, in an official report at this time, recommended the establishment of lazarets, but got little support. Before the present war the literature relating to the military duties of the veterinary surgeon was very scant. Heuss called attention to the great importance of horse lazarets and collecting places, and Potschke was the first to establish horse collecting stations (which were the first beginnings of the lazarets) at the great autumn manœuvres. The good results obtained there led to their introduction throughout the Army. In February, 1915, the Minister of War ordered the general introduction of horse lazarets. For every corps and every military inspection one to three lazarets were provided, served by a veterinary officer experienced in surgery and infectious diseases. Severely ill horses were put in the stationary lazaret, and in this way a separation of lazaret and depot was brought about. Cured horses must be restored to their original unit. Thus the necessity of the horse lazaret was established, and in May, 1915, the proportion of lazarets for horse depots to the proved strength was fixed. The disappointment was great, however, as now many of the veterinary officers attached to the lazaret fell under the control of an officer as commander who exercised military authority, and was responsible for the maintenance of discipline, whilst the veterinary officer was only occupied with the veterinary technical service. In spite of this personal side, official recognition was a great advance in the development of the lazarets, which were now plentifully supplied with drugs and instruments.

In most of the field this plan worked smoothly, but it fell to pieces in the great forward march into Poland in 1915, because the number of lazarets (one lazaret to one corps) and their mobility were deficient

In June, 1916, changes and new regulations were brought about. Besides the horse-collecting stations, division, corps, camp, or base, and home horse lazarets were formed.

The horse-collecting stations in their present form are only thought of in connection with a war of movement, and are formed by the mobile lazarets. They comprise one veterinary surgeon, one subordinate officer and fifteen men, a horse transport wagon, a store wagon with the necessary effects, food, veterinary medicine chest, and a chest filled with bandages. The horse-collecting depots of the division and corps lazarets furnish the connecting link between the troops and the lazarets. They come directly behind the marching troops, take away sick horses, carry out first treatment, and evacuate them to the proper lazaret.

Each division has 1 to 3 horse lazarets and under special conditions more. They remain 15 to 20 kilometres behind the front, and evacuate at opportune times all severely injured horses to suitable camp or base lazarets in the camping area, or to the advanced collecting places. At every camping place in the line of communications there are at least 1–6 movable horse lazarets which are occupied by those horses whose cure will take some months. The immobile home horse lazarets take in horses unfit for war or such as in their cure will exceed three months. With a stock of 150 patients to every three horses there is an attendant under the supervision of a lieutenant and lance-corporal, one veterinary major or staff veterinary surgeon as technical director, and one chief veterinary surgeon or veterinary surgeon. When numbers increase, there are one lieutenant and ten men to thirty horses, and one veterinarian from the troops is in command of the lazaret. The veterinary health wagon contains all veterinary requirements furnished on modern lines. One horse transport wagon is also supplied.

Construction.—Each lazaret comprises (1) a reception place with three roomy divisions (external complaints, internal complaints, suspected contagious or infectious and obviously contagious or infectious cases); (2) the lazaret proper, with three divisions; (3) the distribution place (*a*) to the original troop, (*b*) to the horse depot, (*c*) to the lazaret at the camping place. The construction of lazarets is best effected in barracks, goods yards, factories and warehouses, or it must be made in tents and wooden structures.

Meadows and paddocks are important for mares advanced in pregnancy, and with foals. Barrack-like wooden stables (air halls) serve well in respiratory diseases.

Management and Duties.—Under a new regulation, the management vests in a commanding officer, who must be a veterinary surgeon

and who is responsible for the technical direction and management, but exercises no disciplinary power.

Every newly-acquired horse is described and entered with the current lazaret number in the record book, and distinguished by a tin disc, numbered, and plaited into the mane and tail, and by branding the hoof. After a strict clinical examination it is put into its proper group, and the mallein and blood tests are applied. If free from contagious or infectious disease it passes into its proper lazaret. The directing veterinary surgeon does not generally concern himself with the treatment, but gives general instructions, and decides on cases for evacuation. Cured horses are transferred to the evacuation station, where they are well fed and cared for and ridden or exercised in order to get them fit for work again. Subordinate officers, attendants and young veterinary surgeons are allotted to the veterinarian as assistants. Every seven days all the horses are well overlooked, and from time to time, especially before discharge, they are submitted to the mallein and blood tests.

The hospital record is strictly kept—each horse has a distinct page, and is classified according to special principles.

The troops are always advised as to the locality of the horse collecting stations, and the lazaret, which preliminary conditions are necessary for things to run smoothly.

A Special Lazaret is provided for mange cases ; it has hot-air rooms for clipping, bathing, and washing, and dressing the skin. Such lazaret, according to Miessner, must possess : (1) a taking-up stable, until after the blood test (*a*) for horses badly infected, (*b*) for horses slightly affected (less than one-third of the body surface) ; (2) a proper lazaret with stables for treated and non-treated horses ; (3) a recovery stable.

Clipping is very important, and is accomplished with a hand-driven machine. Brushing and washing, or dipping, is necessary. Rohol's lime-water mixture is an ideal scab remedy. Other specially useful lazarets are a glanders and brust-seuche (influenza) structure.

(4) Remarks on Our Lazarets.

Austria.—Very badly organised at the beginning of the war. The lack of them caused great hindrances and loss. Now each division has its mobile horse hospital, communication and base hospitals.

Bulgaria.—Probably non-existent, although not known for certain.

Turkey.—Organising after the German style.

(5) Defects in Present Lazarets.

The personnel is insufficient. A collecting depot should have at least one veterinary surgeon, two subordinate officers, and fifteen men

with each 100 to 150 horses. Collecting depots ought to form no part of the lazaret. At present this is the case, and is a source of great weakness. The duties of a veterinary surgeon in a lazaret must be widened. He should have disciplinary power over the men, and not be put under a commanding officer. Horse lazarets should be formed and worked in times of peace, so as to be ready when wanted. A corresponding order to that of the Red Cross in the medical service needs to be formed.—*Swiss Veterinary Journal.* G. M.

URÆMIA OF ACARIAN ORIGIN IN HORSES.

By Veterinary Aide-Major Leneveu
(*Of the Veterinary Hospital at Vernon (Eure).*

The condition described in this note has been observed in horses affected with generalised mange.

It has appeared to us logical for some time to think that the mortality we were observing amongst these animals was not merely resulting from mange, but was more especially the effect of an infectious malady of a typho-anæmic nature. They were varying factors, of which we quote the following:

(*a*) Absence of fever;

(*b*) Mortality limited exclusively to animals suffering from generalised mange, in spite of the proximity in which they were placed to other non-affected horses;

(*c*) Complete disappearance of mortality after the sale of those generalised cases;

have led us to conclude that the acarus can alone be capable of producing the complications experienced. To us there is no doubt that our horses were dying of uræmia, yet, in reality, it was not exclusively uræmia, but an intoxication of a complex nature of which uræmia played the most important role.

This notion of uræmia of acarian origin has been to us, if not inspired, at least confirmed by the lecture in the *Journal de Medicine et de Chirurgie Pratiques*, of April 10th, 1917, on an article entitled "L'albuminerie Scabique."

Madame Dr. Uebersteld, in her thesis, at Lyon, 1917, has produced on this subject an interesting work, of which we repeat here the following passages:—

(*a*) Scabiec albuminuria, though not so frequent as some authors suggest, yet is in its incidence of some importance.

(*b*) Scabiec albuminuria appears in the following two forms—Slight albuminuria, passive or transitory, and true nephritis, either grave or mild.

(*c*) The clinical course of this nephritis and its prognostic

importance are in all respects the same as a nephritis developed from a chill.

(*d*) This scabiec nephritis might be complicated with grave uræmia, as the two observations quoted confirm.

(*e*) From a consideration of the work one can conclude that there is a true scabiec albuminuria, which must not be confounded with physiological albuminuria, or that resulting from drugs or Bright's disease, which one might meet with amongst scabiec patients. There exists a true acarian albuminuria, the existence of which is only to be charged to the skin parasite.

Of the different forms mentioned by Madame Dr. Uebersfeld, we have only observed the grave nephritis, usually fatal. at least under the conditions in which our sick were placed.

Amongst horses we have never met with a light passive albuminuria, of which she speaks. At the same time we will not say that it does not exist.

SYMPTOMATOLOGY—GENERAL SYMPTOMS.

(*a*) *Changes observed in the Urinary System.*—These changes are relative to the quantity and quality of the urine. Oliguria and anuria are two conditions which are very obvious when following these cases. The colour of the urine is usually dark and of thick, oily consistency; it frequently contains albumen (eight times in twenty samples examined), and usually also biliary pigments (eighteen times in twenty samples examined). The urinary deposit was very abundant. Microscopical examination was not carried out.

(*b*) *Debility.*—The debility appeared to be preceded by oliguria; it is rapid or slow, depending on the course of the disease. It might attain an extreme degree. One of the most curious changes of the amyotrophy to us appeared to be the form the tail took under the influence of irregular atrophy of the coccygeal muscles. The tail became flaccid, tortuous to the point of presenting often in its length four or five curves in different directions.

(*c*) *Calorification.*—As a general rule the complications occurred without appreciable elevation of temperature. In some cases only we have seen the thermometer rise from time to time to $39.^{2}$ and $39.^{6}$, without apparently the course of the malady being influenced by these rare and fugitive febrile movements; as a general rule the temperature oscillated between 37 and $38.^{6}$.

VARIOUS SYMPTOMS.

We have met with disturbances in the following order :—

(*a*) *Digestive System.*—The appetite was in general maintained during a great part of the course of the condition. Usually it only

disappeared in the last stages. In some cases, but rarely, we have observed diarrhœa. We have never noticed that the dejections diffused an appreciable fetid odour.

(*b*) *Respiratory System.*—As a general rule the respiratory rhythm to us appeared rather slow. We have observed on the other hand the following changes: Œdema of the lungs in two cases. The respiratory rhythm irregular, approaching Cheyne-Stokes breathing in one case. The respiratory rhythm very slow but regular in two cases (six movements in one of the affected, seven in the other). Pulmonary congestion in three cases.

(*c*) *Nervous System.*—Of the nervous changes, the most frequently met with was a comatose form. Three cases presented choreic movements. In one they were localised to the neck, left side, to the left shoulder, and to the left side of the thorax; in a second they were exclusively placed in the muscles of the left side of the face; in a third they were generalised. Symptoms meningo-encephalic were observed in two subjects, which presented the following changes: Blindness, deafness (in these cases there were often attempts to walk forward in an automatic manner, and falls occurred); another case showed, during the termination of its illness, contraction of the muscles of the neck to the left, pirouetting of the eyes.

Lesions.

The only constant lesions which we have remarked during our post-mortem examinations were situated in the kidneys. These organs always showed congestion and were hæmorrhagic. Often the capsule was easily detached from the cortical zone. In some cases we have found pus in the hilum. Regarding other organs, we observed congestion of the lungs, œdema of the lungs, hæmorrhagic spots disseminated on the whole course of the small intestine, congestion of the meninges and of the brain.

Pathology.

What are the causes of the renal changes to produce this uræmia? Madame Dr. Uebersfeld suggests the three following factors:—

1. Cutaneous irritation, producing a reflex action which modifies the renal circulation and brings about functional disturbances more or less grave.

2. The existence in some cases of a true toxi-infectious nephritis.

3. The possibility of the venom secreted by the acarus being implicated in the renal changes must not be overlooked.

There is nothing to show that the same causes are not to be found in the horse, and with all the more aggravation in proportion to the extent of the mange. It is well to add that in the worst cases of mange the overwork to which the kidney is subjected on account of the disorganised skin function may be a contributory cause to the alteration.

On the other hand the uræmia is aggravated in these animals, by auto-intoxication arisingf rom non-function of the skin, and also in certain cases by drug-intoxication. Here lie probably the three essential causes of the complications.

COURSE OF THE MALADY,

The condition may be terminated by a cure under the influence of appropriate treatment. The course the malady takes is rapid or slow. Some subjects become debilitated and die in a few days Amongst others the course is not so rapid, and may be prolonged over one or several months.

Treatment should be on the following lines :—

1. Endeavour to remove from the skin the impurities with which it is soiled and which take away the suppleness.

2. Destroy the acari.

3. Combat the intoxication by diet, hygiene and appropriate treatment.

In order to destroy the acari, we give preference to baths or acaracidal solutions or to sulphur gas. To us it appears preferable to abandon the use of greasy applications and irritant mixtures, especially for badly affected cases. One takes measures against the intoxication by the administration of milk, when that is available. As a diuretic, the acetate of ammonia may be used with profit. We avoid systematically the use of all drugs, internally or externally, which have an irritant action on the kidneys.

The diet for the sick should be choice, rich, and abundant ; mashes, with boiled linseed added, are to be recommended. A green fodder ration would be extremely advantageous.

Hygiene generally and hygiene of the skin are precious adjuncts to treatment and should never be neglected.

*** Professor Nicholas, of Lyon, and one of his pupils, Dr. Mathieu, have found sixteen cases of albuminuria in 101 cases of scabies. Other authors, for instance Boas, have had in their researches almost negative results. Madame Dr. Uebersfeld, pupil of Dr. Nicholas, has found seventeen cases of albuminuria in 260 examined. Our researches, limited to a small number of cases carried out on twenty animals affected with generalised mange, have permitted us to find albuminuria in eight, which represents 40 per cent. L. J. K.

ARSENIVAN IN THE TREATMENT OF EPIZOOTIC LYMPHANGITIS.

F. FAVERO, writing in *Il moderno Zooiatro*, states that being encouraged by the results of different experimenters who have obtained good results by the treatment of epizootic lymphangitis

with arsenical compounds, he has been minded to try the value of the new antisyphilitic remedy arsenivan. Ten subjects have been treated with complete success. The cure was effected in eleven to thirty days. Arsenivan is well tolerated. Its administration by ingestion and by the vein causes no complication; subcutaneous injection appears to be the most efficacious mode of administration, but it occasions local accidents which it should be possible to avoid with appropriate technique. The dose is 50 centigrammes, and it is renewed every second day.—*Revue Générale de Médecine Vétérinaire.* G. M.

THE CURATIVE TREATMENT OF EPIZOOTIC LYMPHANGITIS BY VACCINE THERAPY.

BY VELU.

THE author, writing in *Bulletin de la Société centrale de médecine vétérinaire,* observes that Wright's method applied to the treatment of epizootic lymphangitis causes a reaction of the organism, which is denoted by very marked symptoms in the specific lesions. Subcutaneous injection of a dose of anticryptococcic pyovaccine produces a positive phase, in the course of which there is aggravation of all the symptoms, suppuration is increased, hypersensibility exaggerated, œdema abundant, maturation of the buds. This phase lasts three to six days; then after one or two days there occurs a negative phase, the œdema declines, the secretions decrease, the wounds lose their specific aspect with raised borders (cloacal appearance) and level up, cicatrisation goes on rapidly; this phase lasts four or five days. A new injection brings about a succession of the same phenomena; but if it is made before the end of the positive phase, the negative phase is only slight, and of short duration. It is therefore necessary to find out the suitable doses, and the intervals at the end of which the injections must be renewed, to determine the insignificant negative phases and the positive predominant phases; on the other hand Wright's vaccines only act when the malady possesses sufficient vitality to cause reaction. It is necessary to avoid too strong or too proximate doses. In practice one injects 2 to 5 cc. of the vaccine and waits seven or eight days. If there is persistent aggravation the dose is too strong; we must wait a few days before injecting a weaker dose. If there is no improvement the dose is too weak; a stronger dose must be injected immediately. If there is plain improvement the dose is sufficient; it ought to be renewed without delay and repeated until followed by complete cicatrisation, which probably occurs in from thirty to forty days. Some experiments on the preventive properties of the vaccine have been made by vaccinating all animals belonging to contaminated units stationed in the infected region of Maroc.—*Revue Générale de Médecine Vétérinaire.* G.M.

THE PRODUCTION AND SELF-DESTRUCTION OF DOMESTIC FLIES IN HORSE MANURE.

By M. E. ROUBAUD.

Horse manure is the best medium for the development of the domestic fly. All the other materials (diverse manures, excrement, liquid manure, sweepings) to which one ordinarily accords a rôle in the production of the fly do not really come into question.

Manure kept only for twenty-four hours in a stable produces in the warm months an average of 10,000 to 20,000 flies per cubic metre ; the proportion may even reach 30,000 to 35,000. It is estimated that a horse produces sufficient manure to give rise to the development during summer of 40,000 to 50,000 flies per month, even 160,000 to 200,000 flies during the most favourable season, viz., June and September.

Fresh manure alone plays a part in the production of flies. The laying of eggs even takes place in the stable on the dung impregnated with urine, an indispensable condition. Oviposition may continue for twenty-four hours, but never later. Fermentation, after barely twenty-four hours, definitely protects the manure from the laying of eggs. Antiseptic substances and larvicides (borax, cresol, ferrous and ferric salts), by delaying fermentation, may prolong deposition one or two days. Employed as larvicides these substances, by prolonging the period of infestation, often produce a result the very opposite of that intended. From the sixth day manure when placed in a heap does not contain larvæ, these having migrated to the base for nymphosis. Anti-fly measures, therefore, ought to be taken within five days of the removal of the manure from the stable. Manure twenty-four hours old at the time of the removal does not contain visible larvæ. The eggs which are disseminated throughout the manure heap then open and the larvæ come to the surface, leaving the central parts as fermentation develops and the temperature rises. On the following day a temperature of 70°C. to 90°C. may be found in the centre of the heap. The heat arising from fermentation in a manure heap may be used as a means of destroying the larvæ which it contains. The larvæ of the domestic fly, protected from the gases of fermentation, dies in three minutes when exposed to a temperature of 50°C. In contact with the gases it dies in one minute at 51°C., in five to seven seconds at 59°C., and four to five seconds at 60°C. When a manure heap is turned over the larvæ which come in contact with the hot parts in the interior are killed at once. A complete stirring up of the manure on the day after the deposition, and repeated on the two following days, causes a disappearance of ninety per cent. of the larvæ. This operation is more easily and quickly done if, instead of waiting until the infected heap has

itself produced the necessary temperature, it is exposed to the heat of a heap previously fermented. For this purpose, instead of placing the new manure on the surface of the heap as is usually done, it should be buried in the hot parts by covering all its surfaces with a layer of hot manure twenty centimetres thick. In four or five hours the new manure may be considered as entirely free from eggs and larvæ, which would otherwise have developed in thousands. This biological method of delarvization by heat is equivalent to the heating of the whole of the fresh manure to a temperature of 50°C. to 60°C., and is effected without apparatus and without fuel. It is within the reach of all and only a simple training of the personnel is required. In practice, it is found that the mass of fermented manure required to furnish the necessary temperature is about eight times that of the fresh manure to be treated. Next day this may be used in its turn as a source of heat. The biothermic method of treating fresh manure can alone destroy quickly and cheaply the eggs and larvæ in a manure heap. The various methods of covering in manure heaps with materials such as earth, straw, etc., can only prevent the flies on the outside from depositing their eggs on the surface of the manure, they cannot hinder the development of the eggs which have been previously deposited on it in the stables. Now these furnish the greatest proportion of the larvæ, and from them, according to my experiments, at least eight thousand to ten thousand flies originate.—JOURNAL OF THE R.A.M.C.

Obituary.

MR. THOMAS WRIGHT, M.R.C.V.S.

MR. WRIGHT commenced practice in Putney in 1900. His principal work was amongst polo ponies at Hurlingham, Ranelagh, and Roehampton Polo Clubs. He was chief veterinary surgeon to the Guards' Club at Southfields. In 1916 he purchased for his son, who had just qualified, the practice of the late Mr. J. W. Brownless, of Barnes and Kensington. During the Boer War Mr. Wright acted as Transport Veterinary Officer. He again offered his services in 1914, and from that date to December, 1916, he made many voyages between Britain, Canada, America, and other countries until December, 1916, when his ship was torpedoed and sunk. He then for a time acted as Civil Veterinary Surgeon to the Woolwich Remount Depot. His health, however, already undermined by his experiences afloat, gave way, and he was forced on medical advice to resign. Death occurred on January 1st at Nottingham, while on a visit to his son-in-law.

Mr. K. P. Rankin, M.R.C.V.S., D.V.H. The interment took place in Manchester in the family grave on January 5th, 1918. Mr. Wright was 62 years of age, and leaves a widow, two daughters (Laura and Elsie) and three step-daughters, and one son, Captain T. Lewis Wright, A.V.C., who is serving in Mesopotamia.

MR. J. A. TODD, M.R.C.V.S.

NEWS has been received of the death, in Scotland, of Mr. John Alexander Todd, and keen regret was expressed by a very wide circle of friends. It was twenty years ago that Mr. Todd, a member of the Royal College of Veterinary Surgeons, came to Worthing and established himself in practice, subsequently transferring himself to premises in Chapel Road, specially built for his occupation, and known as the Animals' Hospital. In the summer of 1913 Mr. Todd effected an exchange of practice with Mr. Percival Carter, at West Kirby, in Cheshire, not far from Liverpool. After the outbreak of war he entered the veterinary branch of the Army, and attained the rank of Major in May, 1915 ; but he subsequently returned to civil practice, and it was at Campbeltown, in Argyllshire, that his death occurred on the last day of the Old Year. During his student days Mr. Todd was a member of the Glasgow Queen's Regiment, and when he came to Worthing he obtained a Commission as Veterinary Lieutenant in the Hampshire Carabiniers, being subsequently transferred to the Sussex Yeomanry. Mr. Todd was largely responsible for the success of the Southern Counties Veterinary Society, for he assumed the honorary secretaryship when the membership was only twenty-five, and when he relinquished the office, on his departure for the North, the number had been increased to nearly eighty. Mr. Todd, who was 46 years of age, leaves a widow and three daughters, now living at Kilcreggan, in Argyllshire, and much sympathy will be extended to them by their Worthing friends in their great bereavement.

KEROL

KEROL combines all the properties which go to the making of an ideal preparation. It has been shown to be practically non-toxic, non-irritant and non-corrosive, a combination of properties which make it the one preparation which can be used with perfect confidence wherever the use of either a disinfectant or antiseptic is indicated. It is of high and definite germicidal value and is perfectly homogeneous.

Its carbolic acid co-efficient on B. typhosus is from 21 to 23, and on B. mallei 20 to 22.

KEROL has been used by the medical and veterinary professions to some years past, and the following testimony proves its sterling worth.

Dear Sirs,—I have used KEROL extensively during the past three years in my veterinary practice; I have used it both in my clinical work and as a stable disinfectant. I find that as a surgical antiseptic it gives the most excellent results, and its non-poisonous and non-irritant qualities make it perfectly safe, and I find that in addition to keeping a wound aseptic it promotes rapid healing. The stud of horses of which I have charge numbers over 600, so you will see that my experience of it is a very large one. Yours truly,.....M.R.C.V.S.

Dear Sirs,—I have, during the last two or three years, made considerable use of your KEROL Disinfectant Fluid in the ordinary routine of a mixed Veterinary practice and have come to entertain a high opinion of the preparation.

On account of its high carbolic co-efficient and its marked deodorant properties it is exceedingly well suited for such work as the irrigation of the uterus after removal of the placenta in cattle, and in the case of mares in similar conditions it may be relied upon to rapidly bring the uterus into a non-septic state with a consequent fall in temperature and the elimination of that dreaded complication Septic Laminitis.

It is a very suitable and efficient preparation for asepticising the skin prior to operation, as its power of emulsifying the fatty material in the skin enables it to penetrate deeply, and in the treatment of wounds, fresh or septic, it has not the objectionable property of coagulating the albuminous fluids to any extent. Yours faithfully,.....M.R.C.V.S.

Dear Sirs,—I may say that I have found such of the KEROL PREPARATIONS as I have used very effective, especially when used among infectious cases of disease, such as Distemper in Dogs; in washing floors, flushing drains, and in bathing parts contaminated by exudation and discharge; in sponging off dogs' faces where the eyes were constantly discharging; the Kerol Sawdust has also given me great satisfaction, as it readily absorbs moisture and effectually destroys offensive smells.

Yours faithfully,.....M.R.C.V.S.

The Manufacturers will be pleased to send on samples and literature to members of the profession on application.

QUIBELL BROTHERS, Ltd.,

202, Castlegate, NEWARK.

The Guaranteed

DISINFECTANT

The Veterinary Potentialities of FREE IODINE.

"……In animal surgery the use of iodine has not been practised as it should have been, and its use ought to become more general, and its effects, if used properly, are simply marvellous ……"

Veterinary Journal, Jan., 1914, *p.* 5.

This striking passage defines exactly the beneficent effects of free Iodine in the words—" simply marvellous."

Iodine has a dual nature which brings it therapeutically into conflict with itself. On the one hand it is powerfully antiseptic, absorptive and anti-inflammative; on the other hand it is irritating, corrosive, and destructive of tissue.

In some few conditions these conflicting properties do not matter, but in the majority of instances they defeat the true value of the drug, and consequently the Veterinary Surgeon's intentions.

Vetiod is **FREE** Iodine—ideal, efficient, and beneficent in its effects, and totally free from all of the many disadvantages of other preparations of Iodine. Vetiod is actually bland in action, soothing to mucous surfaces, powerfully penetrating, antiseptic, absorbent, non-staining. Its action is in strong contrast to tinctures and liniments of Iodine, both in absence of inherent drawbacks and rapidity of results.

Vetiod has been used with marked success in Eczema and other Skin Diseases, Mange, Ringworm, and other parasitic conditions. Grease in Horses, Cracked Heel, Capped-Hock and Elbow, Bursitis, Swollen Glands, Tumours, Abscesses, Bites, Tears and Wounds of all kinds, Pleurisy and Pneumonia, all Inflammatory Conditions, etc., etc., and as a thoroughly reliable Emollient Antiseptic in Surgical Operations and Obstetric Work.

VETIOD is sold in Aseptic Covered Pails holding 7 lbs. each PRICE 28/- net and Earthenware Pots holding 1 lb. PRICE 4/6 net.

TO VETERINARY SURGEONS ON MILITARY SERVICE.

VETIOD is regularly employed by the War Office (A.V.S.); it may be procured by requisition through the usual official channels.

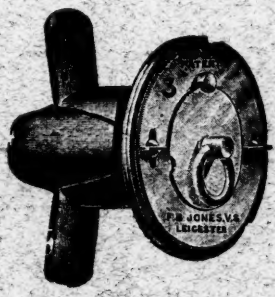
Please note that for Army use it must be ordered by its synonym, UNG: IODI. M. & J.

Write for Literature relating to "VETIOD" OVULES.

These products are of the greatest value in Veterinary RECTAL and VAGINAL MEDICATION.

MENLEY & JAMES, Ltd., "Menley House," Farringdon Rd., LONDON, E.C.

XUM



THE GENUINE

"JONES"

TRACHEOTOMY TUBES

Still the Simplest and Best for

Material, Workmanship and Design.

PRICE LIST FREE

Miss JONES,

Aberbraint, 77, Knighton Church Road,

LEICESTER,

Successor to F. B. Jones, M.R.C.V.S.L., deceased.

DO YOU READ

The Veterinary News

Edited by E. Wallis Hoare, F.R.C.V.S.

THE WEEKLY VETERINARY PAPER

The Veterinary News is independent—it contains Reports, Full Records of Society Meetings, Special and Original Communications, Clinical and Special Articles on Graduate and Post-Graduate Education, and seeks to render itself the

Indispensable Organ of Veterinary Opinion in the United Kingdom.

Subscribe NOW for 1918.

POST FREE,

PER 15/- ANNUM,

Inland and Abroad.

Combined Subscription with "The Veterinary Journal,"

PER 25/- ANNUM,

Post Free.

BAILLIÈRE, TINDALL & COX,

8, Henrietta Street, Covent Garden, London, W.C.2.

SAFEGUARD YOUR HEALTH WITH
Dr. J. Collis Browne's
Chlorodyne
The Best Remedy
known for
COUGHS, COLDS,
ASTHMA, BRONCHITIS.
Effectually cuts short attacks of SPASMS, HYSTERIA, PALPITATION.
Checks and arrests: FEVER, CROUP, AGUE.
A true palliative in GOUT, TOOTHACHE, RHEUMATISM, NEURALGIA.
Acts like a charm in DIARRHŒA, COLIC, and other bowel complaints.
Convincing Medical Testimony with each bottle.
Of all Chemists, 1/3, 3/-, 5/-.
There is No Substitute.
See that you get Dr. J. Collis Browne's

London: Printed by Baillière, Tindall & Cox, 8, Henrietta Street, Strand, London, W.C.2.